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⑤4発明の名称　折畳み容器の折曲機構

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明　細　書

1．発明の名称

折畳み容器の折曲機構

2．特許請求の範囲

(1) 周壁部の一部に斜面部を形成し、該斜面部の上方に上側面部を連続させるとともに下方に下側面部を連続させ、上記斜面部と上側面部及び斜面部と下側面部とを、脱型時の型の移動方向に開口する屈曲部で連接してなる折畳み容器の折曲機構。

(2) 屈曲部は脱型時の型の移動方向に開口するU字状である特許請求の範囲第(1)項に記載の折畳み容器の折曲機構。

(3) 屈曲部は側壁部より肉厚である特許請求の範囲第(1)又は第(2)項に記載の折畳み容器の折曲機構。

3．発明の詳細な説明

(産業上の利用分野)

本発明は外径寸法や内容量(以下嵩という)を変化させることができる折畳み容器の折曲機構に関し、特に最小嵩状態で内部に食料品を収納して流通過程に置き、使用時には最大嵩状態にして供するのに好適なものである。

(従来の技術)

容器の嵩が増減可能であると流通過程での価格節減、内容物の酸化防止、内容物の充填や封緘作業性の向上、温度変化に基づくシール破損防止等多くの実用的効果を伴なうので、嵩が変化する折畳み容器が望ましい。

しかし、実際に流通過程に置かれて実用に供される折畳み容器としては、少なくとも下記の4機能に耐えなければならない。

(1) 嵩の増減が自在であるばかりでなく、最大嵩状態と最少嵩状態との夫々が安定し、しかもいずれが一方の状態にあるとき、通常の容器の使用条件によって加わる外力、例えば荷重、振動、衝撃、温度変化、圧力変化等によって容易に他の状態に変化する恐れが無いこと。しかも作為的操作による手動によっても簡単に上記した状態変化が

可能で、更に両状態の変化の途中では外力を加えない限り安定しなくていずれか一方に近い状態まで自力で変化して安定する性質を有し、且つ、変化の操作は反復繰り返しが可能であること。

(2) 取り扱いや生産性を向上させるため、最大嵩状態と最少嵩状態との変化量、特に高さの変化が大きいこと。

(3) 生産が容易で従来の嵩が変化しない容器の最も簡単、低廉の製造方法に依っても製造できること。例えば、生産方法は真空又は射出成型が可能で、キャビティが分割したり、スライド機構や強制抜き等を要しないで、一工程で成型が可能であること。

(4) 原材料はプラスチックのソリッド材でも発泡材でも使用できること。

折畳み容器としては上記した4機能を最少必要限満足しなければ流通過程や使用時に供し得ないので商品としての価値が無い。

従来から有る嵩変化可能な折畳み容器としては、特公昭57-7987号公報（以下第1公知例という）、特開昭56-84246号公報や実開昭60-8262号公報等（以下第2公知例という）、実開昭51-134216号公報や実開昭58-14353号公報等（以下第3公知例という）などが知られている。

上記した第1公知例は容器の底部に傾斜面と反転底とを設け、傾斜面の上端と胴部の下端及び傾斜面の下端と反転底の周縁とに屈曲部分を設けたものである。

上記した第2公知例は胴部の一部に上下方向に伸縮する蛇腹部を設けたものである。

又、上記した第3公知例は胴部の一部に横方向に伸縮する蛇腹部を設けたものである。

〈発明が解決しようとする問題点〉

上記した各折畳み容器であっても以下の様な多くの欠点が有る。

第1公知例では、一応前記した(1)の機能を満たすために提案されたものと認められるが、傾斜面と反転底との屈曲部分を充分に薄肉にしないと実用的に屈折しない。この屈曲部分の厚さは少なくとも胴部や傾斜面の厚さの3分の1から5分の1であり、真空成型で製造すると屈曲部分を上記した厚さにするのが不可能である。又、屈曲部分を上記した厚さにするため、横方向に展出させることも可能であるが、脱型時に型が抜けないし、容器成型後にローラ等で屈曲部分を押し潰して薄肉にすることもできるが生産性が著しく低下することになる。

そして、第1公知例において、屈曲部分が胴部等とあまり変らない厚さであれば剛性が大きいので、最少嵩状態において外力を加えなくても反転底が最大嵩状態に復元する可能性が有る。又、外力を加えて最大嵩状態から最少嵩状態に変化させようとしても、特に傾斜面が歪んで折れたり破損することが有り、しかも仮に最大嵩状態から最少嵩状態に変化できたとしても屈曲部分の内部応力により反転底が最大嵩状態に復元する力が生じ、安定性が悪くなったり塑性変形が発生して最少嵩状態から最大嵩状態の変化に対応する復元性が悪くなったり亀裂が発生する危険が有る。

上記した第1公知例は上面を蓋板で熱溶封緘する際に内容物がはみ出して熱溶を妨害しないこと、及び封緘後の内部空気量を減少して減圧を図ることを目的にしているので、反転底の操作は機械的外力で強制的に行なうことができるし、封緘後は内部の減圧状態により反転底が最少嵩状態から最大嵩状態に戻ることが無いし、封緘後に使用するため開封したとしても反転底を最大嵩状態にする必要性が無い。したがって、第1公知例では前記した構成で充分に所期の目的を達成するが、折畳み容器としての前記した機能の内、(1)の一部と(2)、(3)、(4)を達成することができない。

第2公知例は、容器の内部に即席食品を収納する場合、食品充填あるいは流通段階で食品の水分が少ないから最少嵩状態にし、飲食時には熱湯を注入して内容物の体積を増加するので最大嵩状態にするが、この両状態が安定しないので、充填作業時に容器が潰んだり飲食中に蛇腹部に亀裂が生じて容器内部の湯が漏れ出ることがある。しか

も、蛇腹部により脱型時に型が抜けないので分割型を使用する必要が有るので成型性が悪い。したがって、前記した機能の内、(1)、(3)、(4)を達成することができない。

第3公知例は構造が複雑で生産性に劣り、しかも最大蓄状態と最少蓄状態とにおける状態の安定性に欠けるばかりでなく、比較的柔軟な材料で成型しなければならない。したがって前記した機能の内、(1)、(3)、(4)を達成することができない。

(問題点を解決するための手段)

本発明は上記に鑑み提案されたもので、周壁部の一部に斜面部を形成し、該斜面部の上方に上側面部を連続させるとともに下方に下側面部を連続させ、上記斜面部と上側面部及び斜面部と下側面部とを、脱型時の型の移動方向に開口する屈曲部で連接するようにした容器の折曲機構を側面の一部に構成することにより、どのような構造又は形状の折畳み式容器であっても少なくとも上記したすべての機能を達成することができ、内容物の充填工程においても、流通過程においても、或は使用時においても障害がなく、実用的に供することができるものである。

(実施例)

以下に本発明における容器の側面一部の折曲機構を図面の実施例により説明する。

第1図は本発明の折畳み容器1を最大蓄状態にした縦断面を示すもので、上記折畳み容器1は底面部2と、該底面部2の周縁から上方に向く側壁部3とを有して上面が開放する。

上記した側壁部3は高さの途中の一部に斜面部4を形成し、この斜面部4の上方に上側面部5を連続させるとともに、斜面部4の下方に下側面部6を連続させる。そして、上記斜面部4の上縁と上側面部5の下縁とは脱型時の型の移動方向に開口する上屈曲部7で連接し、斜面部4の下縁と下側面部6の上縁とは脱型時の型の移動方向に開口する下屈曲部8で連接する。

図面の実施例では上屈曲部7が上方に開口し、下屈曲部8が下方に開口している。

上記した各上屈曲部7、下屈曲部8は上向き又は下向きのU字状が望ましく、又側壁部3より肉厚であるのが望ましい。

上記した構成の折畳み容器1を最大蓄状態から最少蓄状態に変化させるには上側面部5に上からの外力を加えるか、底面部2に下からの外力を加えるのである。

この変化状態を第3図(a)から(c)の原理に基づいて説明すると、折畳み容器1が最大蓄状態のときの最大外径D_0及び最少内径d_0は、折畳み途中に於て斜面部4が水平に移動するので最大外径がD_1にまで拡径し、最少内径がd_1にまで縮径する。そして、上側面部5の下方は外方に伸張し、下側面部6の上方は内方に縮小するので、これらの寸法変化を原材料の弾性限界と折畳み操作のときに加えられる外力の範囲内に設定しなければならない。この範囲より高くなると折畳み時に容器が破損したり永久変形を生じるばかりでなく、手動により折畳み操作が困難になる。従って、上屈曲部7や下屈曲部8を形成してなければ斜面部4の反転角度θや径方向の長さl及び最大折畳み高さH等は使用する原材料により上限が決定される。

しかし、本発明のように上側面部5の下縁と斜面部4の上縁とを上屈曲部7で連接し、斜面部4の下縁と下側面部6の上縁とを下屈曲部8で連接すると、第4図(a)から(c)で示すように折畳み時に上屈曲部7及び下屈曲部8が弾性的に伸縮して上側面部5や下側面部6の変形を吸収するために反転角度θや長さlを大きくすることが可能で、その結果、最大折畳み高さHが大きくなって蓄変化を大きくすることができる。しかも、上屈曲部7や下屈曲部8は、真空或は圧空成型の場合は成型時に原材料が局部的に引き伸ばされることにより必然的に肉薄になり、また射出成型の場合は金型を特別な構造にしなくても肉薄に設計して成型できるので、屈曲性が高まって上記した形状の変化を吸収したり折畳み操作性を速やかにすることができる。

上記した上屈曲部7、下屈曲部8は一種のヒンジとしての機能を有するので柔軟に屈曲し、しか

も亀裂等が生じないことが必要であるが、この点は部分的に肉厚にすることで達成できる。

上屈曲部7や下屈曲部8を肉厚にすることは、上屈曲部7や下屈曲部8が脱型時の型の移動方向に開口しているので射出成型でも真空成型でも簡単に形成することができ、しかも型を特別の構造にする必要がない。

第5図は本発明の他の実施例を示すもので、上屈曲部7及び下屈曲部8を、複数のU字状部分9…を連続して構成したものである。

この場合、上屈曲部7、下屈曲部8とも隣り合うU字状部分9は開口方向が上方又は下方となって交互に相違し、全体として横向きの蛇行状となっている。

したがって、この実施例における上屈曲部7や下屈曲部8の径方向の長さが前記した実施例の上屈曲部7や下屈曲部8より長いので形状変化による吸収機能が大きくなり、嵩変化量を大きくすることができるばかりでなく、上屈曲部7や下屈曲部8の厚さも前記実施例より厚くしても屈曲性を阻害することがない。

第6図は本発明の他の実施例を示すもので、上側面部5を下側面部6より充分に長くし、斜面部4を底面部2に接近状にしたものである。又、第7図の実施例は上記第6図の実施例とは逆に上側面部5を下側面部6より充分に短くし、斜面部4を上方に位置させたものである。

上記した各実施例では上側面部5と下側面部6との高さの相違分だけ最大嵩状態と最少嵩状態とにおける高さの変化が少ないが、実質的嵩変化が大きい。そして、第6図の実施例では比較的内容物が少ないが、飲食時に水や熱湯を充分に供給しなければならない食料品に効果的である。又、第7図の実施例では比較的内容物が多いけれど飲食時にあまり水や熱湯を入れなくてもよい食料品に効果的である。

第8図の実施例は側壁部3に上下2段の斜面部4を形成し、両斜面部4の間に中側面部10を介在させたものである。そして、上側面部5の下縁と上方の斜面部4の上縁との上屈曲部7や上方の斜面部4の下縁と中側面部10の上縁との下屈曲部8、及び中側面部10の下縁と下方の斜面部4の上縁との上屈曲部7や下方の斜面部4の下縁と下側面部6の上縁の下屈曲部8とは、前記した各実施例と同様に脱型時の型の移動方向に開放している。

したがって、この実施例によれば上下2段に折畳むことができるので嵩の変化量が極めて大きくなり、内容物が少ないけれど飲食時に多量の水や熱湯を供給する食料品に特に効果的である。

なお、第5図から第8図の実施例において、説明していない符号は第1図や第2図の実施例の同一符号と同一の構成であるから説明を省略する。

以上本発明を図面の実施例に対て説明したが、本発明は上記した実施例に限定されるものではなく、特許請求の範囲に記載した構成を変更しない限りどのようにでも実施することができるものである。例えば斜面部4や上側面部5、下側面部6にリブを形成して折畳み容器1全体の強度を高めてもよいし、斜面部4を上下1段や2段ばかりでなく、更に多段にしてもよい。また形状は円形ばかりでなく四辺形にすることもでき、折畳み容器としての機能を損なわない限りどのような構造の容器にしてもよい。

（発明の効果）

以上要するに本発明によれば周壁部の一部に斜面部を形成し、該斜面部の上方に上側面部を連続させるとともに下方に下側面部を連続させ、上記斜面部と上側面部及び斜面部と下側面部とを、脱型時の型の移動方向に開口する屈曲部で連接するようにしたので、最大嵩状態と最少嵩状態との両状態が極めて安定し、いずれか一方の状態において通常の使用条件で外力が加わっても他の状態に変化することがなく、しかも両状態の途中であればいずれかに近い状態に安定しようとする。したがって、内部に内容物を充填する場合、流通過程、使用時等において状態変化がなく、実用的なものになる。

又、最少嵩状態が従来より著しく小さく、しかも最大嵩状態を大きくすることができるので特に

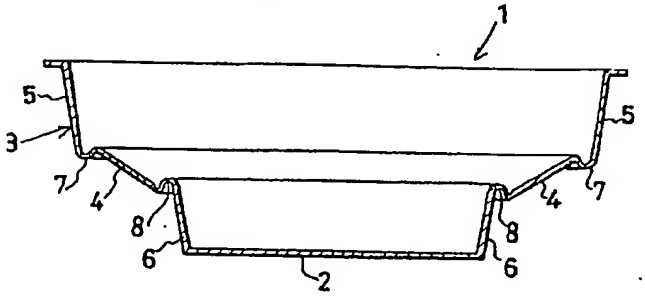
流通過程における取り扱いが有効で、更には原材料が特定されないし成型が従来と同様に型を使用して簡単に生産できるので低廉に供することができ、実用的価値の高いものとなる。

4．図面の簡単な説明

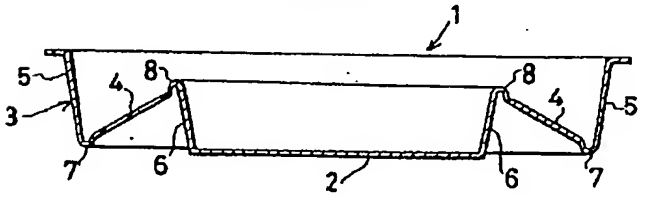
図面は本発明の一実施例を示すもので、第1図は展開状態の縦断面図、第2図は第1図の最少嵩状態の縦断面図、第3図(a)から(c)及び第4図(a)から(c)は折畳み時の原理図、第5図は本発明の他の実施例を示す一部の拡大断面図、第6図から第8図は本発明の他の実施例を示す縦断面図である。

1は折畳み容器、3は側壁部、4は斜面部、5は上側面部、6は下側面部、7と8は屈曲部。

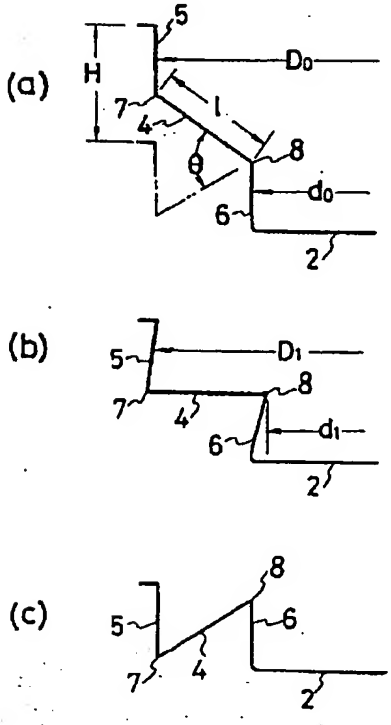
第1図



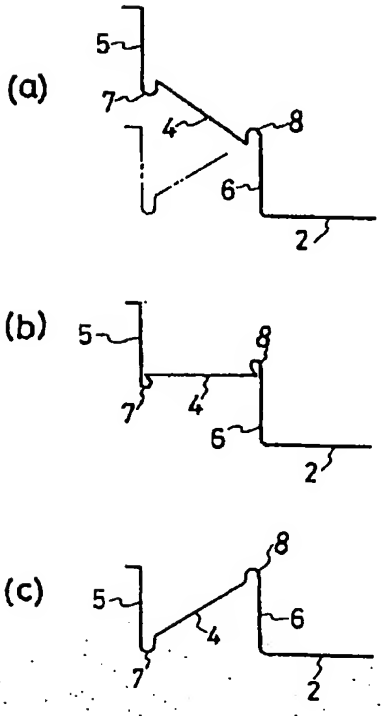
第2図



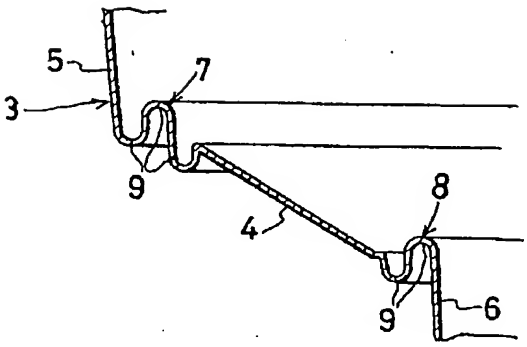
第3図



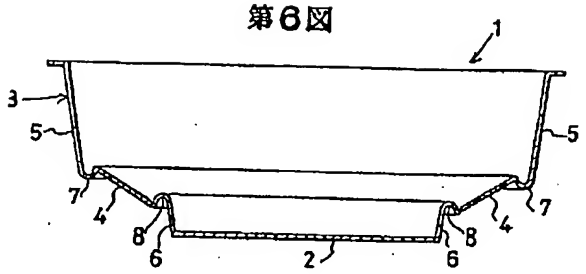
第4図



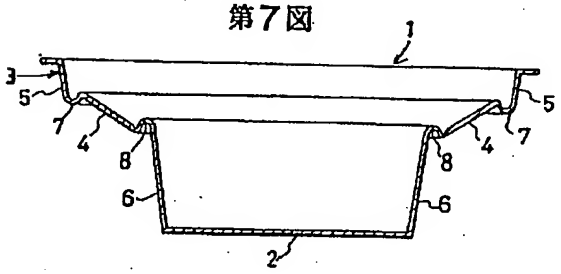
第5図



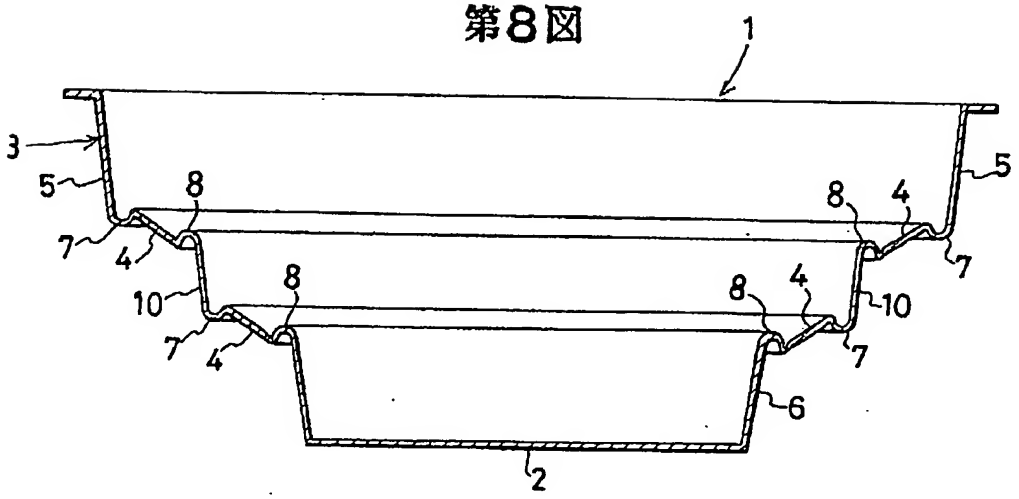
第6図



第7図



第8図



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(11) Laid Open Patent Publication No.
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(54) Title of the Invention Bending Mechanism for Folding Container

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SPECIFICATION

1. Title of the Invention Bending Mechanism for Folding Container

2. What we claim is :

(1) A bending mechanism for a folding container characterized in that an inclined section is formed on part of a peripheral wall, an upper side face section is allowed to continue to said inclined face section at the upper portion thereof and a lower face section is allowed to continue at the lower portion thereof, and the above - mentioned inclined face section and the upper side face section and the inclined face section and the lower face section are connected by bending sections which open in the direction of the movement of a mold at the time of mold removal.

(2) A bending mechanism for a folding container, in accordance with Claim 1, characterized in that the bending sections are of a U shape which open in the direction of the movement of a mold at the time of mold removal.

(3) A bending mechanism for a folding container, in accordance with Claim 1 and Claim 2, characterized in that the bending sections are thinner than the side wall section.

3. Detailed Explanation of the Invention

[Utilization Field in the Industry]

The present invention relates to a bending mechanism for a folding container which allows the outer diameter and the content (hereinafter referred to as volume) to be varies, and especially pertains to a container which may

contain food therein in the minimum volume state suitable for distribution and which may be provided in the maximum volume state at the time of use.

[Conventional Technology]

If the volume of a container can be reduced or increased, a large number of practical advantages such as a cost reduction in distribution, prevention of oxidation of a content, improvements in packing operation or sealing operation of a content, and seal damage prevention due to a temperature change may ensue, and therefore, a folding container whose volume can change is desirable.

However, a folding container which can be used practically in a distribution process has to satisfy or meet at least the following 4 functions.

(1) Not only a reduction or an increase in volume is freely possible, but also the minimum volume state and the maximum volume state are stable and if in either state, another state should not be easily affected by external force such as a load, vibration and impact, a temperature variation or a pressure variation which may occur under a normal condition of use of a container. Furthermore, the above - mentioned change in state is easily and simply possible manually through an intentional operation, and furthermore, it should have a stable property to return to a state close to either of the states

by itself when it is in the step of changing from one state to another, unless an external force is applied, and the operations to change can be repeated.

(2) In order to improve the handling and productivity, the quantity of changes between the minimum volume state and the maximum volume state, especially a change in height, is large.

(3) Production is simple and easy and it can be produced according to the simplest low cost production process of containers whose volume can not be changed. For example, as to the production process, a vacuum or injection molding is possible, and it should be possible to mold it by one step without cavity division, a slide mechanism or a forced mold removal.

(4) As to a raw material, use may be made of a solid plastic material or a plastic foaming material.

Unless a folding container satisfies at least the above - mentioned 4 functions, it can not be provided at the time of a distribution process or use and thus it does not have any value as a commercial product.

As conventionally available containers whose volume can be changed, there have been known Patent Gazette, Patent Publication No. Sho 57 / 1982 – 7987 (hereinafter referred to as first known example), Laid Open Patent Gazette, Laid Open Patent Publication No. 56 / 1981 – 84246, Laid Open Utility Model Gazette, Laid Open Utility Model Publication No. 60 / 1985 –

8262 (hereinafter referred to as second known example), Laid Open Utility Model Gazette, Laid Open Utility Model Publication No. 51 / 1976 – 134216, Laid Open Utility Model Gazette, Laid Open Utility Model Publication No. Sho 58 / 1983 – 14353 (hereinafter referred to as third known example), etc.

In the above - mentioned first known example, there are provided an inclined face and a turn –over bottom at the bottom section of a container, and bending sections are provided at the upper end of the inclined face, at the lower end of the body section, the lower end of the inclined face, and the periphery of the turn- over bottom.

With the above - mentioned second known example, there is provided a bellows section which can be expanded or shrunken in the up or down direction, at one portion of the body section.

In addition, with the above - mentioned third known example, there is provided a bellows section which may be expanded or shrunken in the side way direction, at one portion of the body section.

[Problem Points which the Invention Tries to Solve]

The above - mentioned folding containers have various defects as follows.

With the first known example, it can be more or less recognized that it has been proposed to satisfy the function of (1), however, unless the thickness of

the bending section between the inclined face and the turn- over bottom is made sufficiently thin, it can not be bent in practice. The thickness of this portion is at least 1/3 to 1/5 that of the inclined face and the body section, and molding by the vacuum molding can not make the bending section as thin as the above - mentioned thickness. In addition, in order to achieve the above - mentioned thickness for the bending section, it is possible to allow it to protrude in the side way direction, a mold can not be removed at the time of mold removal, and it is possible to make the bending section thin by pressing it with a roller, etc. after molding a container, but the productivity is markedly reduced.

And, with the above - mentioned first known example, if the bending section has a thickness similar to the body section, etc., the rigidity is high and thus there is a possibility that in the minimum volume state, even without applying any external force, the turn- over bottom returns to the maximum volume state. In addition, if one tries to change it from the maximum volume state to the minimum volume state by applying force, especially the inclined section might be distorted, broken or damaged, and even if one succeed in changing it from the maximum volume state to the minimum volume state, there arise dangers in that the internal stress in the bending section may generate a force to return the turn- over bottom to the maximum volume

state, the stability becomes deteriorated, plastic deformation is caused, the restoration property from the minimum volume state to the maximum volume state may deteriorate or cracks may be generated.

As the purpose of the above - mentioned first known example is to prevent a contain from coming out from a container at the time of heat sealing of the upper surface with a cover, thereby hindering the heat sealing and to try to reduce the inner pressure by reducing the inner air volume after sealing, the turn- over bottom can be manipulated forcibly with external force, the turn-over bottom may not return from the minimum volume state to the maximum volume state due to the reduced pressure state of the inside after sealing, and it is not necessary to return the turn- over bottom to the maximum volume state when it is opened for use after sealing. Therefore, with the above - mentioned first known example, the initial purpose can be sufficiently achieved by the above - mentioned constitution, however, out of the above - mentioned functions as a folding container, part of (1), and (2), (3) and (4) can not be satisfied.

With the above - mentioned second known example, in a case in which instant food is accommodated in a container, since the water content of food is small, the minimum volume state is used at the time of packing or distribution, and the maximum volume state is used at the time of eating as

hot water is poured and the volume of the content expands, however, since both of these states are not stable, a container may be expanded at the time of packing or cracks may be caused on the bellows section during eating, leaking hot water in the container. Furthermore, since a mold does not come off from the bellows section at the time of mold removal, it is necessary to use a split mold, thereby deteriorating the moldability. Therefore, out of the above - mentioned 4 functions, (1), (3) and (4) can not be achieved.

With the above - mentioned third known example, the structure is complicated and the productivity is poor. Furthermore, it lacks stability in the minimum volume state and in the maximum volume state, and it is necessary to mold it with a relatively flexible material. Therefore, out of the above - mentioned functions, (1), (3) and (4) can not be achieved.

[Means by which to Solve the Problem Points]

The present invention has been achieved in view of the above - mentioned problems, and by forming at a portion of the side face a bending mechanism for a folding container characterized in that an inclined section is formed on part of a peripheral wall, an upper side face section is allowed to continue to said inclined face section at the upper portion thereof and a lower face section is allowed to continue at the lower portion thereof, and the above - mentioned inclined face section and the upper side face section and the

inclined face section and the lower face section are connected by bending sections which open in the direction of the movement of a mold at the time of mold removal, at least all the functions mentioned above can be achieved for a folding container of whatsoever structure or whatsoever configuration, and at the time of packing a content, or a distribution process or use, there is not hindrance and it can be practically used.

[Examples Embodying the Invention]

In the following, we shall explain the bending section / sections at a portion / portions of the side face of a container in accordance with the present invention by referring to the examples embodying the invention shown in the drawings.

Fig. 1 shows a cross section of a folding container, 1, in accordance with the present invention in the maximum volume state thereof. The above - mentioned folding container, 1, has a bottom face section, 2, and a side wall section, 3, directed upward from the periphery of said bottom face section, 2, and the upper face thereof opens.

An inclined face section, 4, is formed at a mid portion of the height of the above - mentioned side wall section, 3, an upper side face section, 5, is allowed to continue to the upper side of this inclined face section, 4, and a lower side face section, 6, is allowed to continue to the lower side of the

inclined face section, 4. And, the upper edge of the above - mentioned inclined face section, 4, and the lower edge of the above – mentioned upper side face section, 5, are connected by an upper bending section, 7, which opens in the direction of the movement of a mold at the time of mold removal, and the lower edge of the above - mentioned inclined face section, 4, and the upper edge of the above – mentioned lower side face section, 6, are connected by a lower bending section, 8, which opens in the direction of the movement of a mold at the time of mold removal.

In the example embodying the invention shown in the drawings, the upper bending section, 7, opens upward and the lower bending section, 8, opens downward.

The above - mentioned upper bending section, 7, and lower bending section, 8, are desirably of an upwardly directed U- shape and a downwardly directed U- shape, respectively. And they are preferably thinner than the side wall section, 3.

In order to change the folding container, 1, of the above - mentioned structure from the maximum volume state to the minimum volume state, external force is applied to the upper side face section, 5, from above or external force is applied to the bottom face section, 2, from down.

Now let us explain this changing state based on the principle shown in Fig. 2 (a) to Fig. 3 (c): with respect to the maximum outer diameter D_0 and the minimum inner diameter d_0 when the folding container, 1, is in the maximum volume state, the maximum outer diameter is increased to D_1 and the minimum inner diameter decreases to d_1 as the inclined face section, 4, moves horizontally during the folding. And, since the lower portion of the upper side face section, 5, is stretched outward, and the upper side of the lower side face section, 6, shrinks inward, it is necessary to set these changes in size to within the elastic limit of a raw material and within the range of the external force applied at the folding operation. If higher than these ranges, a container might be broken or damaged or permanently deformed at the time of folding, and furthermore a manual folding operation becomes difficult. Therefore, if the upper bending section, 7, and the lower bending section, 8, are not provided, the upper limits of the turn- over angle θ of the inclined face section, 4, the length l in the radial direction thereof and the maximum folding height H thereof, etc. are determined by a raw material. However, if the upper edge of the above - mentioned inclined face section, 4, and the lower edge of the above – mentioned upper side face section, 5, are connected by an upper bending section, 7, and the lower edge of the above - mentioned inclined face section, 4, and the upper edge of the above –

mentioned lower side face section, 6, are connected by a lower bending section, 8, like in the present invention, the upper bending section, 7, since the lower bending section, 8, undergoes elastically stretching or shrinkage at the time of folding as shown in Fig. 4 (a) through (c), thereby absorbing the deformation of the upper side face section, 5, and the lower side face section, 6, it becomes possible to increase the turn- over angle, θ, and the length, l, and as a result, the maximum folding height, H, becomes large and the volume change can be made large. Furthermore, the upper bending section, 7, and the lower bending section, 8, become inevitably thin in thickness for a raw material is locally stretched at the time of molding in a case of vacuum molding or reduced pressure molding, and even without allowing a mold to have a special structure, in a case of injection molding, it is possible to design and mold a product with a thin thickness. Therefore, flexibility is improved, and it becomes possible to absorb a change in the above - mentioned configuration and to achieve a rapid folding operation.

The above - mentioned upper bending section, 7, and lower bending section, 8, are required to have a function as a hinge, they can flexibly be bent, and furthermore, it is necessary not to cause cracks, etc., and this can be achieved by making the thickness partially thin.

To make the upper bending section, 7, and the lower bending section, 8, thin in thickness, can be simply achieved by injection molding or vacuum molding for the upper bending section, 7, and the lower bending section, 8, open in the direction of movement of the mold at the time of mold removal, and it is not required to make a mold to have a special structure.

Fig. 5 shows another example embodying the invention: the upper bending section, 7, and the lower bending section, 8, are formed by constituting a plurality of U- shaped sections, 9, in a continuous manner.

In this case, the U- shaped sections, 9, which are adjacent to the upper bending section, 7, and the lower bending section, 8, have opening directions upward or downward in an alternating manner, and as a whole, side- wise meandering states are formed.

Therefore, as the lengths in the radial direction of the upper bending section, 7, and the lower bending section, 8, in this example embodying the invention are longer than those of the upper bending section, 7, and the lower bending section, 8, in the above - mentioned example embodying the invention, the absorption function of changes in configuration becomes large, allowing a volume change quantity to be larger, and even if the thicknesses of the upper bending section, 7, and the lower bending section, 8, are made thicker than the above - mentioned example embodying the invention, the bending

property may not be hindered. Fig. 6 shows another example embodying the invention: the upper side face section, 5, is made sufficiently longer than the lower side face section, 6, and the inclined face section, 4, is made closer to the bottom face section, 2. In addition, with the example embodying the invention shown in Fig. 7, to the contrary to the example embodying the invention shown in Fig. 6, the upper side face section, 5, is made sufficiently shorter than the lower side face section, 6, and the inclined face section, 4, is positioned upward.

In each example embodying the invention mentioned above, the change in height between the maximum volume state and the minimum volume state is small by the difference in height of the upper side face section, 5, and the lower side face section, 6, but the practical volume change is large. And, in the example embodying the invention shown in Fig. 6, the quantity of the content is relatively small, but it is effective for food which requires the supply of a sufficient volume of hot water or water at the time of eating. In addition, with the example embodying the invention shown in Fig. 7, it is effective for food which does not require water or hot water much at the time of eating, although the content is relatively large.

In the example embodying the invention shown in Fig. 8, inclined face sections, 4, in 2 stages (upper and lower stages) are formed on the side wall

section, 3, and a middle side face section, 10, is placed between both inclined face sections, 4. And, the upper bending section, 7, for the lower edge of the upper side face section, 5, and the upper edge of the inclined face section, 4, at the upper side, the lower bending section, 8, for the inclined face section, 4, at the upper side and the upper edge of the middle side face section,10, the upper bending section, 7, for the lower edge of the middle side face section, 10, and the upper edge of the inclined face section 4 at the lower side, and the lower bending section, 8, for the lower edge of the inclined face section, 4, at the lower side and the upper edge of the lower side face section, 6, open in the direction of movement of a mold at the time of mold removal, similar to each of the above - mentioned examples embodying the inventions.

Therefore, according to this example embodying the invention, as a container can be folded in 2 stages (upper and lower), the change quantity in volume is extremely large and it is especially effective for food which requires a large volume of water or hot water at the time of eating, though the content is small.

Here in the examples embodying the invention shown in Fig. 5 through Fig. 8, the symbols which are not explained are the same symbols and structures

as those in examples embodying the invention shown in Fig. 1 and Fig. 2, and therefore, explanation is omitted.

In the above, we have explained the present invention by referring to examples embodying the invention shown in the drawings, however it should be understood that the present invention is not limited to the above - mentioned examples embodying the invention, and they can be embodied in any manner as long as the scopes of the Claims are not modified. For example, it is permissible to provide a rib / ribs on the inclined face section, 1, the upper side face section, 5, or the lower side face section, 6, to increase the strength of the whole folding container, 1, or to provide a larger number of stages of the inclined face sections, 4, than 1 stage or 2 stages (upper and lower). In addition, the configuration is not limited to circular but can be quadrilateral, and as long as functions as a container are not damaged, a container of any structure is permissible

[Effects of the Invention]

As described above, as the present invention relates to a container with a bending mechanism for a folding container characterized in that an oblique section is formed on part of a peripheral wall, an upper face section is allowed to continue to said oblique face section at the upper portion thereof and a lower face section is allowed to continue at the lower portion thereof,

and the above - mentioned oblique face section and the upper face section and the oblique face section and the lower face section are connected by bending sections which open in the direction of the movement of a mold at the time of mold removal. Therefore, it is extremely stable in both the minimum volume state and the maximum volume state: even if external force is applied in either of the states under a normal condition of use, the state does not change, and furthermore, in a case in which it is in a middle state between the 2 states, it tends to return to a closer state. Therefore, there is not any change in state in a case in which a content is being packed therein, at the time of distribution process or in use.

In addition, the minimum volume state is markedly small in comparison with the conventional one, and furthermore, for it is possible to increase the maximum volume state, it is especially effective for handling during distribution. Furthermore, as a raw material is especially specified, and molding can be simply done by use of the same ordinary mold, it can be produced at a low cost and its practical value is great.

4. Simple Explanation of Drawings

The drawings show one example embodying the invention. Fig. 1 shows a vertical cross section in the maximum volume state thereof. Fig. 2 is a vertical cross sectional view of the minimum volume state shown in Fig. 1,

and Fig. 3 (a) through (c) and Fig. 4 (a) through (c) show the principles of folding. Fig. 5 shows a partially enlarged cross sectional view which shows another example embodying the invention, and Fig. 6 through Fig. 8 are vertical cross sectional views which show other examples embodying the invention.

1 is a folding container, 3 is a side wall section, 4 is an inclined face section, 5 is an upper side face section, 6 is a lower side face section and 7 and 8 are bending sections.

Fig. 1

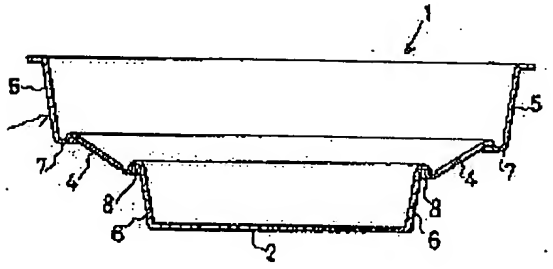

Fig. 2

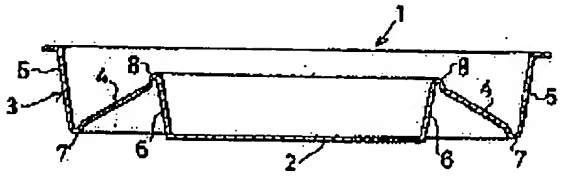

Fig. 3

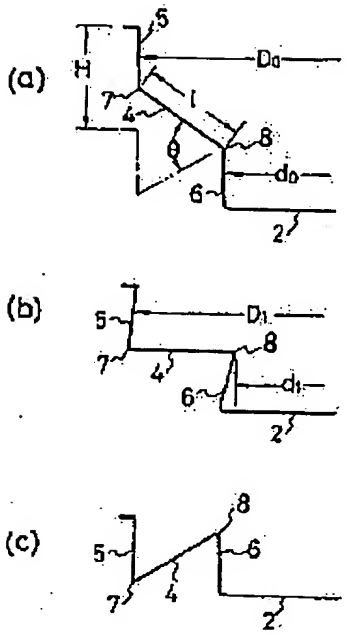
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Fig. 4

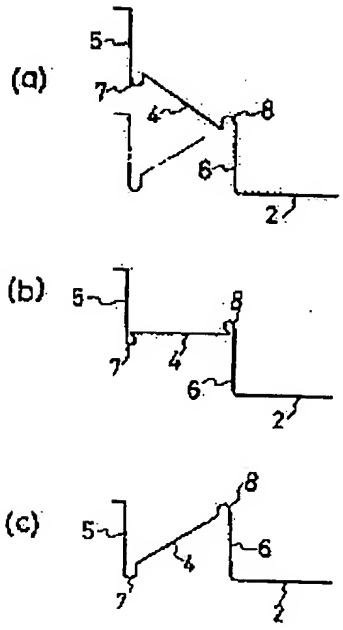
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Fig. 5

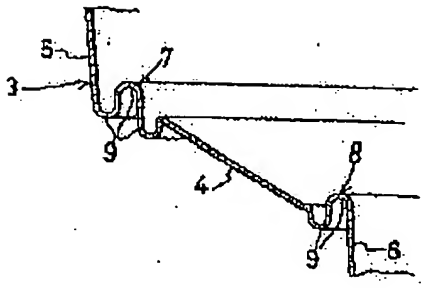


Fig. 6

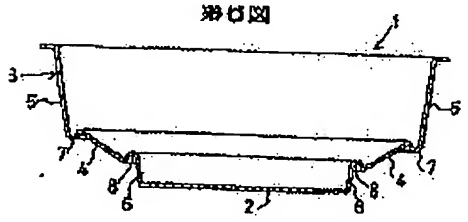


Fig. 7

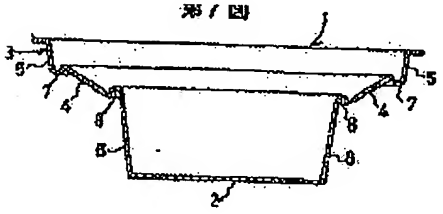
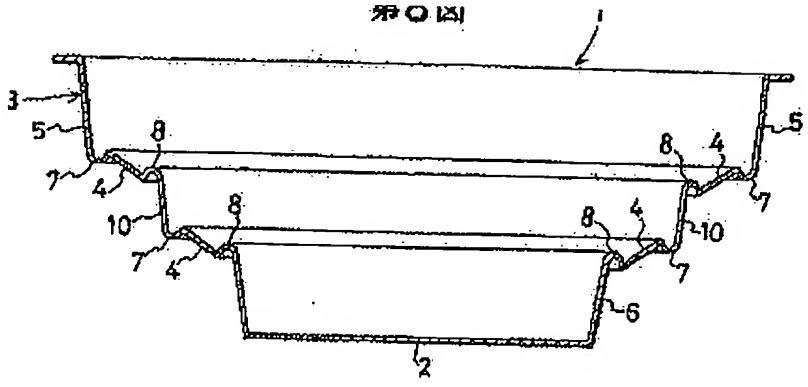


Fig. 8



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